1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

283 designating the number of strands in a rope (*tou'a*), the word *tua* was
322 used as a prefix, *tua to'u* meaning to triple and *tua fa* to quadruple. Thus *tou'a tua to'u* signified three-strang rope, *tou'a tua fa*, four-strand, and so on.

322 The adzes used in wood-work appear to have been always of stone,
412 although Quiros (25, vol. 1, p. 28) speaks of adzes of "thick fishbone and shells." It appears that for the northern half of the group at least, the island of Ei Ao was a center for the industry of making adz heads, on account of good stone being found there, but the adzes were made everywhere out of the best available stone.

To'i (*or toki*), was the generic term for adzes. There were doubtless many special terms for various kinds but only a few of them are known. Among these are *toki paopao*, a large adz (8), *toki tui pu*, a very large adz with a handle four feet long for canoe-making, and *toki-ouao* (8), described by Dordillon. The adz handle consisted of a crooked piece of wood (fig. 16, *a*), usually *fau*, according to Linton. In a chant descriptive of canoe-making, *noni* is mentioned as being used for that purpose but that such was the case is very doubtful, as *noni* wood is too soft. Colored, ornamental sennit lashings were used in binding the head to the handle. A lashing mentioned in the chant above referred to was called *humu a Tana-oa* (lashing of *Tana-oa*). One of the string figures collected by
[524] Mrs. Handy is called by the same name. The finding of this string figure furnishes us, therefore, with a definite and interesting example of the derivation of ornamental lashing designs from string figures. According to Linton the stone head was wrapped in bark cloth before being bound with the sennit, the cloth binding to the stone head better than did the hard coconut fiber. Sacred adzes (*toki mana*) were used in coffin-making.

STONEWORK

324 Only the briefest mention will be made of stonework since this is a subject studied and described in detail by Linton. Skilled professionals directed the labor of making the stone platforms (*paepae*), that were used in connection with houses, feast places, tomb-temples, and other sacred places. In platform construction a core of earth or rubble, or both, was encased by walls made of three types of stone: common blocks or boulders (*ke'a*), which are to be found everywhere in the valleys and streams, furnished the major part of the material used in the walls, roundish, smooth beach-boulders (*kivu*) were used for horizontal, ornamental rows in the side-walls of some terraces, and for sections of the top pavements; and squarely cut blocks (*ke'etu*) of soft, reddish, volcanic stone or coral served as a curbing to trim the edges of certain section of elaborate platforms

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

501 bamboo sewed to the edge of each plank, to keep in a stuffing of oakum, made of the coconut shell also.

Over the seams between the sideboards and the hull, both inside and outside, were strips made of wood or bamboo (*teka, vaho, teka oto, ta'i, patua*). Caulking of the seams at this place and at the point of attachment of bow and stern-piece was done usually with coconut cord fiber (*kaha*), or with feathers (*hu'u manu*). Langsdorff (18, p. 173) describes caulking with moss over which was rubbed resin from the breadfruit tree. Bulk-

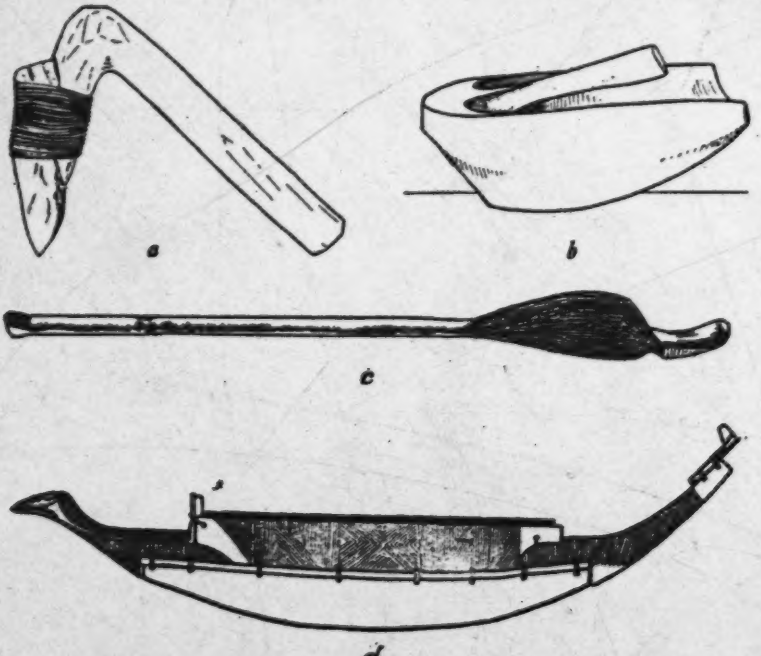

FIGURE 16.—Canoe and implements: *a*, adz; *b*, bailer; *c*, paddle; *d*, canoe.

heads in the body of the canoe are described by Porter. Seats (*papa tau*) for paddlers rested on an inner strip (*teka oto*) which covered the inboard seam between the sideboard and the hull. These strips were bound and held in place by sennit. The two rods (*kiato, hoa*) supporting the outrigger were usually fau poles; Marchand (22, p. 131) describes rods of bamboo. The supporting rods passed across the top of the canoe, being lashed to the top of each gunwale, or sideboard, by means of sennit that passed around the rod and through holes in the board. These lashings were ornamental

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

says that *katea* (Alyxia) was used. According to this writer (15, p. 34), the bark of *mi'o* was also *some*times used. The implements employed in making *tapa* consisted of a stone (*ke'a, kiva*), a wooden anvil (*tutua*) and

FIGURE 17.—Tapa beaters (*ike*).

the wooden beater (*ike*) (fig. 17). Cloth-making was a woman's industry.

The following simple and concise descriptions of making *tapa* in ancient times are translated and briefed from a manuscript written in the native dialect by Dordillon (9)—evidently copied from descriptions by a native:

> The breadfruit tree was climbed and a branch cut off with a sharp stone. The bark was pulled from the branch with the teeth and beaten for a long time on a stone with the wooden beater. The fiber was then worked in fresh water with the hands, after which it was bundled up and carried into the house where it was left four days. Being then brought out, it was beaten again on a smooth beach boulder, then on a wooden anvil, after which it was put in the sun to dry. If the cloth were dyed (yellow *ena* furnished the only dye), it was soaked in the dye before drying. In the making of the ute cloth the stem of the paper mulberry plant is dscribed as being cut down, peeled, and the bark put first in water and then beaten to remove the inside bark. The fiber was then left in the house for some time, after which it was beaten and felted together, rinsed, and the cloth dried by being stretched out in the sun with stones laid on the border to hold it.

Melville (23, pp. 172-173) describes cloth-making in Nuku Hiva as he witnessed it:

> In the manufacture of the beautiful tapa generally worn on the Marquesan Islands, the preliminary operation consists in gathering a certain quantity of the young branches of the cloth-tree. The exterior green bark being pulled off as worthless, there remains a slender fibrous substance, which is carefully stripped from the stick, to which it closely adheres. When a sufficient quantity of it has been collected, the various strips are enveloped in a covering of large leaves, which the natives use precisely as we do wrapping-paper, and which are secured by a few turns of a

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

251 When the fruit is sufficiently tender,
252 the women peel it with the *pu kava*, a shell in which two sharp-edged
[412] holes have been filed, and lay it on a bed of fau leaves with a cover of leaves, to ripen further.

The next day, the flesh is so tender that it may be squeezed off the core with the hand. The cores are thrown away, the flesh is put into a temporary, shallow hole, lined with plaited coconut leaves and with banana leaves, or into a *hoa no te ma*, an above-ground basket of plaited coconut leaves attached to a circle of fau pegs driven into the earth (See Pl. v, *A*). Linton describes one of these in detail:

> These containers are made as follows: A number of small saplings are driven into the ground forming a circle four to six feet across. Inside these, mats woven from coconut fronds are placed in pairs so that the walls will be everywhere two or more mats thick. The midribs at the upper edges of the mats are attached to the saplings with strips of *fau* bark. Three tiers of mats are placed one above the other, giving the walls a height of about two feet. The bottom of the container is not covered Inside these mats, a thick layer of banana leaves is placed vertically, covering the floor and sides. The mat walls are called *puru*, the leaf lining *au meika ameika*.
>
> After the container has been filled with pieces of breadfruit, the ends of the leaves forming the inner lining are bent back so as to cover the top, and are weighted with large stones.

When the *mei* has been drained of some of its water in this temporary hole, and fermentation has started, it is transferred to the permanent silo, or *ma* pit.

For daily use, each family has its own *ma* hole. Pits were dug near the house with iron-wood sticks (*ko fenua*). Mr. Handy has seen one family *ma* pit, which was lined with stones; Krusenstern describes them as being paved with stones (16, p. 161); Dordillon gives the word *pakeko* or *pakeho*, to define a hole lined with masonry, in which to put fermented breadfruit; but the usual container seems to have had only earthen walls. High on the mountains, in ancient times, great tribal *ma* pits were dug for storage against famine. These tribal pits are no longer used, as a rule, though Mr. Handy has seen one at Hapa Toni, Tahu, Ata, containing *ma* a hundred years old, which is occasionally eaten at the present time. (See also 15, p. 47.)

Krusenstern also describes a great *ma* hole on the hillside in Atu Ona valley on the way to Pua Ma'u, which is 15 feet deep on a side, and is at present 25 feet deep. It was formerly 15 feet deeper. The sides are of volcanic clay, with even, ornamental courses made with tools, running around in parallel rows, called *pauao*. The Ati-ku'a had five of these built on hill tops.

Linton says of these tribal pits:

> They are sometimes in or near the feast place, but are more often in the hills where they would be safe in case of attack. Some of them are of great size, the

[i.e., breadfruit.—Analyst]

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

252 *Taro leaves.*—Taro leaves (*e u*) are a delicacy, whose virtues Marquesans have always appreciated, though their present methods of preparation—boiling with coconut milk or baking with salt pork—are of Tahitian origin. *Hue taitio* is a genuine native dish, however. A package of young taro leaves is wrapped in many layers of *fau* or breadfruit leaves, which protect it from too intense a heat, and cooked upon charcoals above ground. When the steamed taro leaves are removed, the package is cut into slices, dipped into sea water, and eaten—whence the name, *hue taitio*, which describes the bowl (*hue*), the sea water (*tai*), and the sound made [271] by sucking the delicacy (*tia*). The sea water is of course drunk when the taro leaves have been eaten. Young *ihi* (*Inocorpus eduli*) leaves are prepared in the same fashion. Coconut milk is sometimes used instead of sea water. A further use of taro leaves will be described with the preparation of meat.

Piahi.—In general anything grated and mixed with coconut milk, and baked in a loaf is called a *piahi*. Taro, yams, and manioc are all used to make *piahi*. Probably a *piahi* was made in the old days of wild arrowroot (*pia taki oho au*).

The *ihi* nut (*Inocarpus edulis*), which may be roasted and eaten in the same way as the chestnut of America, is delicious when made into a *piahi*. The nut is cut open with an axe (formerly, the natives say, there grew an *ihi* which could be bitten open or torn apart with the fingers), the kernel is removed and soaked overnight, so that the dark skin can be peeled off. ● [412] The kernel is then grated (in former times on the tail of a skate) into the coconut milk, the immediate immersion in the liquid preventing it from turning dark and rancid. The milk and gratings are stirred constantly until a thick batter is formed. This is wrapped in banana leaves in long, flat packages, and baked in the oven.

Sometimes, when the new breadfruit season is beginning to show its promise in new young fruits, a green breadfruit is picked to make *ka'aku* but green fruit is not very satisfactory, for the flesh is lumpy and hard to pound. The product is contemptuously called, *ka'aku tu tai peto* (dog's dung, *ka'aku*).

Bananas.—Bananas are eaten raw or are baked in their skins. Some- [251] times they are preserved by drying. Having been first split with the thumb into their three segments and sunned for three or four days, they are wrapped tightly in banana leaves and bark. Prepared in this way they will keep for several months. These uses of bananas, however, are of recent and varied introduction. Porter (24, p. 94) describes the native method of ripening them:

4: Fernandez de Quiros T-5 (1595)1904
OX6 Marquesas OX6

648 The Adelantado and some of the soldiers gave them shirts, hats, and other trifling things, which they presently put round their necks, dancing and singing in their fashion, and loudly called to the others to look at what they had been given. Their conduct annoyed the Adelantado, who made signs to them to go; but they not only would not leave the ship, but became more free in taking things they saw. Some cut slices from our bacon and meat with [412] knives made of cane, and wanted to take other things. At last the Adelantado ordered a gun to be fired, and when they felt and heard it, with great terror, they all jumped into the water and swam to their canoes, only one remaining in the ship. He was clinging on to the main channels, and they could not make him let go, until some one wounded him on the hand with a sword, which was shown to the others, and they took him into a canoe. At this time they fastened a rope to the ship's bowsprit, and, by rowing, tried to tow her on shore, thinking they could thus take her.

When the native was wounded, they all became warlike, and were marshalled by one who carried a parasol of palm leaves. Among them was one old man with a long and well-ordered beard, who cast fierce looks from his eyes, put both hands into his beard, raised his moustaches, stood up, and cried out, looking in many directions. They played on sheils, and striking with their paddles in the canoes they [411] showed their hostility: some taking up the lances which they brought, tied down; others with stones in slings, not having other arms. With good will, they began to hurl stones, and wounded a soldier; but first they had come near the ship, and those with lances threatened to throw them. The soldiers pointed their arquebuses, but, as it had been raining, the powder would not ignite. It was a sight to behold, how the natives came on with noise and shouts; and how some, when they saw weapons pointed at them,

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

tudinal poles, usually single bamboos, which ran the full length of the inside of the roof. The two outermost poles were placed eight inches to a foot above the stringer and below the ridgepole; the third pole was placed midway between them. They were attached to all the rafters by lashings of sennit or bark string. Both the front and rear roofs projected six inches to a foot beyond the end walls. 342

One house in Hiva Oa (Pl. XL. *C*) had a narrow porch supported by an additional row of posts, topped by a stringer. These posts were planted in the *paepae* about two feet in front of the house wall. The rafters of this porch were inclined at a lower angle than those of the roof. This feature was not observed elsewhere and was probably due to European influence.

The rear roof extended from the ridgepole to the ground. It was usually supported by eight main rafters, but these were not hewn so far as observed. They were simply peeled hibiscus poles of slightly larger diameter than those used for the remainder of the roof. In some houses all the rafters of the rear roof were identical in size and material. Between the main rafters were smaller poles placed two or three inches apart; at the peak they crossed the similar poles of the front roof forming a crotch. These smaller poles were secured in position on the rear roof by three cross poles of bamboo, the highest being opposite the top crosspiece of the front roof, the lowest about eighteen inches above the floor, and the third midway between them. All the rafters were lashed to these cross poles.

All the early descriptions of Marquesan houses mention the rear roof as perpendicular or descending at a very steep angle, and the old pictures show this feature, also a front roof inclined at less than forty-five degrees. Actual measurements prove that the old authors have exaggerated both these features. The pitch of the rear roofs ranges from eighty degrees in some of the houses of Nuku Hiva to as low as sixty-five degrees in an old dwelling on Hiva Oa. The pitch of the front roof seems to have been rarely, if ever, less than fifty degrees, with about sixty-five degrees as normal. In one old house in the valley of Hana Hehe, Hiva Oa, the pitch of the front and rear roofs is about sixty-five degrees for each.

The roofs of all Marquesan houses were thatched, and a variety of material was employed. In recent buildings coconut mats appear to be the most common, but two or even three sorts of thatch were not infrequently used on the same structure. The thatching mats, which were eight to twelve feet long and one foot to eighteen inches wide, were made by splitting a coconut frond down the midrib and interweaving the leaflets of either half to form a long narrow mat of checker-work pattern. Mats of this sort are still in common use in most parts of Polynesia. The mats were placed on the roof either singly or in pairs, with the midrib edge up and were tied to every third or fourth rafter with loops of sennit or sewed on with bark string. A large wooden needle was used for sewing. The

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

STONE ARTIFACTS

412 324 [325] [321] The original settlers of the Marquesas must have been in possession of effective wood working tools, as they would otherwise have been unable to make the large seagoing craft necessary for so long a voyage. There is nothing to indicate that they were familiar with metals, and these tools must therefore have been of stone or shell. In Oceania the use of shell adzes is practically limited to localities in which stone is rare or absent and it seems probable that the first arrivals in the Marquesas brought with them a knowledge of stone working and of at least the simpler implement forms. The islands of the group, with a single unimportant [135] exception, are volcanic, having a great variety of lavas, basalts and tuffas, but they contain no workable deposits of sedimentary or metamorphic rocks. The presence of obsidian is questionable. The primitive implement maker thus had an abundance of material at hand which could be worked by the processes of pecking, grinding and chipping but no minerals which could be pressure flaked. Deposits of workable stone occur in practically all the large valleys, and although there was a distinct tendency toward local specialization and trade, implements of all the known types appear to have been at least occasionally manufactured in each locality. The stone working industry was thus in the hands of many persons, with a corresponding increase in the chances of individual variation. There are a few indications of the existence of local implement types, but the differences are unimportant.

HAMMERSTONES

The hammerstone is the foundation of any stone industry. Marquesan hammerstones were simply hard, water worn pebbles of convenient size and form which were obtained from stream beds or bowlder beaches. They were not shaped and appear never to have been hafted, and can be distinguished from other pebbles only by the battering of the ends. (See Pl. XLVIII, *F*.)

ADZES AND CHISELS

Under this head it has been thought best to describe all stone implements other than gouges, which have a cutting edge transverse to their long axis. No axes have been reported from the Marquesas. Many implements may, from their form, be at once identified as true adzes, but there is a large class of tangless blades whose use can not be established by the form and it seems best to describe them as a group rather than to risk the error of an arbitrary division into adzes and chisels.

Adzes and chisels appear to be uniformly made of phonolite. The material varies more or less, especially in the larger specimens, and it is evident that it was obtained from several sources. No adz quarries were visited, and from the ac-

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

counts of informants it appears probable that the stone was obtained from rock slides and bowlders in the river beds. According to information obtained by Handy in Pua Ma'u, Hiva Oa, a boy's first adz was made from a fragment of a special black stone which was kept for that purpose in the *me'ae*. Informants were ignorant of the original source of these stones, and of how they were replaced when used up. No objects which might answer this description were seen in any of the *me'ae* visited.

The only large adz workshops visited were on the island of Ei Ao. During the late prehistoric period this island was a tributary of one of the tribes of Nuku Hiva, and the adzes made there were brought to Nuku Hiva and from there distributed in trade to all the other islands of the group. The area of these workshops, and the quantity of chips and rejects, would indicate a highly developed, long continued industry. No regular quarries were known to natives familiar with the island, but a few bowlders of phonolite suitable for adz making were seen. Small workshops are scattered all over the island, but curiously enough the center of the industry appears to have been on the top of a high ridge running along the southern side of the island, at a considerable distance from any source of material. Two striking features of the workshops of Ei Ao are the preponderance among the rejects of small thin forms, and the lack of ground specimens and grinding stones. This would seem to indicate that the trade called for chisels and carving tools rather than for large adzes and that the blades were exported unground.

The only tools employed in adz manufacture were hammerstones and grinding stones. The grinding stones consisted of smooth surfaced natural rocks of varying grain upon which the adzes were rubbed. Large natural bowlders whose surfaces have been worn into pits and grooves by adz grinding are still visible in the neighborhood of many settlements. The grinding of the gouges must have been done with some sort of small whetstone, but no examples were seen. Chants collected by Handy (personal correspondence) mention the use of sand in either the grinding or finishing of adzes, and it seems probable that the sand was placed in the grooves and hollows already worn in the large grinding rocks to hasten the abrasion.

The processes employed in adz manufacture were chipping and grinding, with a limited use of pecking. This last appears to have been used only in connection with a single specialized adz type, the *toki aa*. It is evident from rejects that the adz makers were especially skillful in chipping, bringing the implement to approximately its final form by this method. The chipping upon the bits of adzes is especially fine, the work approaching in excellence that done elsewhere by the pressure flaking process. The cutting edge of the adz was always ground

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

412 324 but the finish on other parts of the implement was extremely variable, used specimens showing all conditions from simple chipping to complete grinding and high polish. According to one of the chants already mentioned the finished adz was honed on the thigh to produce a final polish. The making of a boy's first adz was accompanied by various religious observances which have been described by Handy (32).

The collections of the Bishop Museum contain nearly fifty Marquesan adzes and chisels, and an approximately equal number have been studied elsewhere. From this series it is evident that in the Marquesas these artifacts show a higher degree of variation than in any other part of Polynesia with the possible exception of New Zealand. As a whole they fall at once into two main groups, distinguished by the presence or absence of a tang, while the tanged adzes may be further divided into simple adzes, *toki aa* and *toki kouma*.

SIMPLE TANGED ADZES

The blades of the simple tanged adz are distinguished by a broad straight bit, a cross section varying from rectangular to triangular and sides which slope inward toward the poll. In the quadrangular examples the inner surface may be either flat or slightly concave. The tang is formed by chipping away a portion of the upper end of the outer surface. It can not be distinguished on the inner surface. In some of the triangular specimens the sides of the tang are also chipped away, giving the blade a slight shoulder, but this is not a common feature. As a rule these blades are ground only on the bit and outer surface, exclusive of the tang. In all the quadrangular examples the width of the inner surface is equal to or less than that of the outer surface, never greater. Many of the rectangular specimens of this type agree so closely in form and finish with the normal adzes of the Hawaiian group that in a mixed collection it would be impossible to distinguish them. (See Pl. XLV, *D*.) The triangular adzes of this type, on the other hand, are practically identical with those normal for the Society Islands. (See Pl. XLV, *A-C*.) The bulk of the specimens fall between these two extremes.

TOKI AA

Blades of the *toki aa* type are recognized as a separate class by the natives themselves. They are characterized by a distinct tang, a heavy blade of rectangular cross section, and a more or less complete grinding of all the surfaces. Practically all the specimens of this class are large. The most striking features of the type are the great thickness of the blade portion, which in many adzes exceeds the width of the cutting edge, and the high angle formed by the two faces of the bit, usually fifty degrees or more. The *toki aa* appear to have been the only adzes in whose manufacture the pecking process was employed. In one of the Bishop

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

Museum specimens, No. B3070, the tang has evidently been shaped by this method, while an unfinished specimen, No. B3074, is pecked at the bit. *Toki ao* are said by the natives to have been used for the final dressing of planks. (See Pl. XLV, *E*, *F*.)

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TOKI KOUMA

The *toki kouma* are also recognized by the natives as a distinct class. They are characterized by a long narrow blade of triangular cross section, a well marked tang whose outer surface is often concave, and a narrow bit. In many examples the whole implement has a slight backward curve, the inner surface, which forms the base of the triangle, is more or less concave. The bit is formed by grinding away the base and a varying proportion of the apex of the triangular blade, and by partially grinding the sides adjacent to it. When seen from the front, the bit has the appearance of a shallow angular U with divergent sides, and the implement makes a cut resembling that of a gouge rather than an adz. In a few specimens the inner side of the bit is more or less hollowed, as in European gouges. (See Pl. XLV, *G*, *H*.)

Adzes of the *toki kouma* type are relatively common in the Marquesas, forming about 30 percent of all the specimens observed. They are of all sizes and were employed for a variety of purposes from the hollowing of canoes and containers to cutting ornamental designs on canoes and house posts. One specimen, said to have been used for fine carving, is 7 inches long, with a width of about ¼ of an inch at the bit. It seems certain that heavy, narrow-bitted *toki kouma* were also used in quarrying and dressing the large stone slabs employed in many Marquesan structures.

TANGLESS ADZES

The tangless adzes include a great variety of blades. The larger ones are probably true adzes while the smaller may have been either adzes or chisels. In cross section they range from nearly rectangular to triangular and in finish from a high polish on all surfaces to a simple grinding of the bit. In all examples seen the sides converge more or less toward the poll, which in some specimens is rounded or almost pointed. The bevel of the edge is in every case ground from the narrow side of the implement, which rests against the haft. In the larger specimens, the whole implement frequently has a well marked backward curve. (See Pl. XLVI, *A*.)

Adzes of this type are more numerous in the Marquesas than those of any other class. They are variable in size, outline, and cross section and appear to grade imperceptibly into the simple tanged adzes. The tangs of some specimens are so slight that it is difficult to determine in which class they should be placed.

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

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UNCLASSIFIED ADZES

There are a few Marquesan adzes which defy classification and deserve individual descriptions.

A large adz 8⅜ inches long with a maximum thickness of 1½ inches is shown in Plate XLVI, *B*, 1. The poll is 2½ inches wide and has across its center a well marked ridge. The bit has the remarkable width of 7¼ inches. The blade is rectangular in cross section and has been smoothly ground on all surfaces. The bevel is ground at a long angle, making a thin blade unsuitable for heavy work and it is hard to see for what purpose an implement of this sort could have been employed. The specimen is heavily patinated, indicating a considerable age.

The adz illustrated in Plate XLVI, *B*, 4 has a thin, flat, completely polished blade of beautiful workmanship. It is 3 inches long, with a thickness of less than ⅜ of an inch and a width of about one inch at the top and 1⅜ inches at the bit. The edge is ground with a flat well-marked bevel, and the angles formed by the juncture of the sides with the inner surface have been rounded off.

A large adz of remarkably fine workmanship is shown in Plate XLVI, *B*, 2. In general outline and form of tang it conforms to the *toki kouma* type, but the sides below the tang diverge rather rapidly, forming a broad bit instead of the narrow one normal in implements of that type. The lower side of the bit is considerably hollowed, giving to the cutting edge a well marked curve. The dimensions are: length, 11½ inches; length of tang, 4 inches; maximum thickness of blade, 2¾ inches; width at upper end, 2 inches; width at bit, 3¼ inches. This specimen was purchased in the island of Ua Huka and is said to be of local material and workmanship.

The still more curious adz shown in Plate XLVI, *B*, 3, is the largest Marquesan adz known to the author, being 14½ inches long and weighing slightly over 6 pounds. The upper end is formed into a well marked tang 4½ inches long. Below this tang the shaft is triangular in cross section and of uniform size to within 4¾ inches of the bit. From this point the inner surface slopes forward at an angle of 40 degrees, while the sides broaden out and the outer edge slopes slightly backward. As a result of this the inner ground surface of the bit is oblong, the outer triangular. The whole surface is heavily patinated indicating an age greater than that of most of the specimens in the collection.

On Plate XLVI, 5 is shown a small and crudely made blade 3¼ inches long, one inch wide and one inch thick. The shaft is triangular, but with the base of the triangle forming one side of the implement so that its plane is across that of the cutting edge. The bit appears to be ground equally from both sides, as in an axe, and the cutting edge forms a distinct angle with the axis of the implement, as in

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

a turner's chisel. The shaft, either from accident or intention, is curved to fit the hand accurately, and the whole surface shows a slight but even polish of the sort acquired through wear, so that it is probable that the implement was never hafted.

COMPARISON OF MARQUESAN ADZES WITH OTHER POLYNESIAN TYPES

A thorough comparative study of Oceanic adzes would, the author believes, yield results of great ethnological value. Such a study is beyond the scope of this paper, but it seems well to point out the features which distinguish Polynesian adzes as a class from those used in Melanesia, and to indicate the distribution of the various Polynesian types. No satisfactory information is available for some parts of Polynesia, but the conditions appear to be as follows:

Melanesian adzes as a class are oval or eliptical in cross section, with smoothly rounded contours, and nearly all of them are completely ground and polished. The use of a distinct tang is unknown. Polynesian adzes, on the other hand, are triangular to rectangular in crosssection with surfaces composed of a few large planes meeting at sharp angles. New Zealand appears to have been the only locality in which the grinding and polishing of all surfaces was normal. Fully ground specimens are fairly common from Tonga, the Society, Austral and Cook groups, and from Easter and Chatham Islands, but are less numerous in collections than those which are at least partially rough. In Hawaii and Samoa fully ground adzes are almost unknown, while in the Marquesas complete grinding is practically limited to the *toki aa* type. In Tonga there appear to be two quite distinct types, one of which is clearly Melanesian while the other is an angular tangless blade of Polynesian character. Adzes of Melanesian contour and finish are present in collections from New Zealand, Easter Island, Chatham Island and rarely from the Society Islands. It thus appears that, broadly speaking, adzes of Melanesian type are present in all those localities in which there is a marked tendency toward complete grinding of recognizably Polynesian forms, while they are lacking in regions where complete grinding is rare or absent. It seems probable, therefore, that this feature is everywhere referable to a Melanesian influence, either direct or transmitted, and that the original Polynesian implement was ground, at most, upon the bit and outer face.

The angular Polynesian adzes may be divided into two main classes, tanged and tangless, each of which contains a number of subtypes. Tanged adzes are present in all the marginal Polynesian areas and extend as far west as the Cook Islands but they are rare in Samoa and absent in Tonga. They are divided into well marked local types: the Hawaiian type, the Southwestern type and the New Zealand type.

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The Hawaiian type is characterized by a rectangular or nearly rectangular cross section, relatively thick blade, and grinding upon the bit, or the bit and outer surface only. Fully 90 per cent of the Hawaiian specimens have this form, but its only occurrence outside that group appears to be in the Marquesas, where it is one of the rarer forms (Pl. XLV, *D*).

The southeastern type is characterized by a triangular or subtriangular cross section, a relatively thin blade with a long bevel, and a more or less distinct shoulder where the blade meets the tang. It is often completely ground, and is normally better finished than the Hawaiian type. This is the dominant form in the Society, Austral and Cook islands, and in Easter Island, and is not uncommon in the Marquesas, although the specimens from that locality are inferior in finish to those from further south. Several examples of this type are known from New Zealand but it is lacking in the Chatham Islands and in Hawaii. (See Pl. XLV, *A-C*.)

The New Zealand type is characterized by a rectangular or nearly rectangular cross section, approaching in this respect the Hawaiian type. It is distinguished from the Hawaiian type by its thinner blade, rounded tang, and by a more or less complete grinding of all surfaces. It does not seem to occur in any other part of Polynesia although certain large adzes from the Chatham Islands may be a variant of this type.

The *toki aa* appears to be about equally common in the Society Islands and the Marquesas with related forms in the Cook and Austral islands and possibly in Easter Island. It is lacking in New Zealand and Hawaii. It is impossible to fix its point of origin, but the complete grinding characteristic of the type is at variance with the ordinary Marquesan practice and it seems probable that it was introduced into that group from the south.

The *toki kouma*, with slight modifications, is found throughout the same range as the *toki aa*. A very few examples come from New Zealand. It is entirely lacking in Hawaii although a few chisels from that locality have a slightly similar blade and bit form. Some examples from southeastern Polynesia and New Zealand are completely ground. The type is numerically important only in the Marquesas, and this, coupled with the fact that all Marquesan *toki kouma* show the rough finish characteristic of the group, may indicate that it was developed there. The occurrence of adzes like that shown in Plate XLVI, *B*, 2, in which a blade and tang of *toki kouma* type are coupled with a broad bit, lend support to this theory.

The *toki kouma* is sharply set off from all other Polynesian adz types by the fact that it was hafted with the base of the cross section triangle against the handle, a reversal of the ordinary practice. Among true adzes the nearest

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Oceanic approach to the *toki kouma* form of blade and bit seems to be found in certain shell specimens from Micronesia.

Tangless adzes have been reported from every part of Polynesia for which there is satisfactory information. In New Zealand a well marked local type had been developed, with a thin blade of rectangular or nearly rectangular cross section ground on all surfaces. In Tonga also there appears to have been a distinct local type, characterized by a short, broad blade, relatively thin, and completely ground. The bulk of the Tongan specimens, and of the tangless adzes from all other parts of Polynesia, show such uniformity that one is forced to conclude that all were made after an established pattern. This universal type is characterized by quadrangular to subtriangular cross section, sides which converge toward the poll, and grinding upon the bit and outer face only. (See Pl. XLVII, *A*.)

The dominance of the two main adz types—that is, tanged and tangless—shows the same distinction between Samoa and Tonga on the one hand and marginal Polynesia on the other, which we have already noted in our study of houses and canoes. The tanged adz is dominant everywhere in marginal Polynesia, and lacking in the Samoa and Tonga. The tangless adzes throughout marginal Polynesia may be explained as a result of western Polynesian influence, but their comparative rarity in the Society Islands where western Polynesian influence is strong, and their frequency in the Marquesas, where such influence appears slight, is an argument against this. The wide distribution of tangless adzes, their relative simplicity and ease of manufacture, and their remarkable uniformity wherever found, suggest that they represent a primitive type originally known to all the Polynesians. Specimens collected in the Marquesas link the tangless adzes with both the rectangular and triangular tanged forms and both probably have been developed from the tangless adz.

The Polynesian distribution of the Marquesan adz types would seem to indicate more or less contact with the Society Islands and Southeastern Polynesia in general, while the remarkable similarity of some of the specimens to normal Hawaiian forms suggests an influence from that group also. The importance of the tangless adz may indicate a western Polynesian influence, but is more easily explained as a primitive survival.

METHODS OF HAFTING

Different methods were employed in the hafting of chisels and adzes. No really ancient specimens of either type were seen but the hafted adzes studied agree with the descriptions of informants and are almost identical with the iron bladed adzes still in ordinary use throughout the group, so they are probably good reproductions of the ancient form. The data in regard to the hafting of

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●412 chisels is much less satisfactory. It is certain that the Marquesans, like the Maori, did employ hafted chisels, but no old specimens are now extant.

Adz Haftings

Only three hafted adzes were seen and one of these was made by the informant who made the chisels. The other two specimens were of considerable age, and all three agreed closely in form. The blades in all three specimens were of *toki kouma* type. The use of other forms of blade may have necessitated slight changes in the form of the haft.

[824] Adz handles were usually made of fau wood, care being taken to select old trees as the young shoots are too soft and brittle for the purpose. In one chant the use of *noni* roots is indicated and in another that of *mio* wood (Handy personal correspondence). A branch and a section of the trunk immediately above it were detached, and the natural hook thus obtained was worked down into a more or less smoothly rounded elbow having the two sides of unequal length. The long arm served as the handle and was made from the branch, the short arm to which the blade was attached, was made from the trunk. The entire haft was thickest at the curve of the elbow, the diameter of the two arms gradually decreasing toward their ends. A socket for the blade was cut in the outer surface of the short arm. The upper end of this socket was at about the level of the inside of the curve at the elbow. The form of this socket naturally varied with that of the blade it was intended to accommodate. In all the specimens seen, the socket was flat, running the entire width of the handle and being cut squarely across, or only slightly rounded at the upper end, but many of the blades collected must have required a socket semicircular or triangular in cross section, and tapering toward the upper end so as to fit the contour of the blade accurately.

412 The tang was wrapped in two or three thicknesses of tapa, which were so
284 arranged that they intervened everywhere between the stone and the lashings, and socket. The purpose of this wrapping was to increase the friction of the lashings and keep them from loosening. The lashings themselves were made of
[824] three plait coconut fiber cord of medium weight, and although carefully laid on were not ornamental in the specimens seen. According to informants ornamental
[531] lashings of red and black sennit were used on at least some special adzes. (Handy, personal correspondence.)

The arrangement of the lashings in two specimens was very simple, consisting of a single cord beginning at the lower end and passing round the blade and haft. The loose lower end of the cord was carried back up the inner surface of the haft and held in place by the subsequent turns of the lashing. The upper end was thrust down under the two or three uppermost laps on the inner surface

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of the haft, brought out, and pulled taut. In the third specimen, which was made by the Atu Ona informant, the lashings were laid on in alternate diagonal loops beginning at the bottom. These loops crossed each other along the line of the middle of the tang, giving an ornamental effect. The last two binding loops at the top were horizontal, while two more loops were passed around the haft above the blade. The end was made fast by tucking it under the last few turns of cord on the right side. (See Pl. XLVIII, *A*.) The maker insisted that this form of lashing was the ancient one and it is probable that several forms of ornamental lashing were originally in use. One of these, mentioned in a chant for the making of a boy's first adz, was called the *humua tane oa*, and was probably derived from a string figure of the same name. (Handy, personal correspondence.)

Adz blades were rarely if ever set at right angles to the handle, the included angle in modern specimens being 70 degrees or less. The handles of ordinary adzes were short, those used at the present time are commonly less than a foot long, but blades used for heavy work, such as roughing out canoes were formerly provided with long hafts. In Nuku Hiva an adz with a four foot handle is said to have been used for this purpose. (Handy, personal correspondence.)

The adjustable socket, common in Micronesia and in some parts of Melanesia, seems to have been unknown in the Marquesas, although it was known and used to a limited extent in Hawaii. It is lacking in other parts of Polynesia, and the Hawaiian examples are probably referable to a Micronesian influence.

Chisel Hafting

No specimen of the ancient Marquesan chisel hafts was found, and the following description is based on information obtained in the group and upon two reproductions made by Hapuani, of Atu Ona, Hiva Oa. In both these reproductions the handle consists of a straight rectangular stick of wood between 10 inches and 11 inches long, 1 inch wide, and ¾ inch thick. The wood in one is fau, in the other temanu. A socket for the blade is cut on one side of the lower end of the shaft. When in position the blades project beyond the handle for about two-thirds of their length. The lashings are of sennit, arranged as in the more elaborate form of adz lashing, except that the cord is passed around the handle several times above the socket. (See Pl. XLVIII, *B*.)

Use of Adzes and Chisels

No stone adzes have been used in the Marquesas for many years, but as the form of the modern iron-bladed tools is almost identical with that of the ancient ones it seems probable that the method of use was the same. At the present time every skilled workman owns two or more adzes, at least one of which has a

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412 curved edge. Each of these adzes has its special use and in doing any piece of work, as the shaping of a bowl, great care seems to be taken to use the proper 412 tool for each stage of manufacture. In working any surface a series of light 322 glancing blows are struck instead of two or three heavy ones. Informants agree that this was also the ancient system. The blade of a stone adz could easily be shattered by a heavy direct blow, and it is related that when a *tuhuna* who had been employed to make some object became dissatisfied with his pay or working conditions he would strike a heavy blow, breaking his adz, and with this as an excuse, refuse to finish.

The small straight bladed adzes are also used as planes. The handle is grasped at the curve, with the blade below the hand, edge forward, and the tool is pushed along the surface of the wood, removing a thin shaving. Stone adzes are said to have been used in the same manner.

Very little data could be obtained on the method of using the hafted chisels other than that they were used to hollow drums and cut the lashing holes [824] in canoe parts. They were struck upon the upper end of the shaft with a *too* wood mallet like that used in caulking canoes. (See Pl. LVI, *B*.)

GOUGES

412 The Marquesan collection in the Bishop Museum includes four implements uncommon to the group, and it has been thought best to describe them separately under the head of gouges although it can not be said with certainty that they were not hafted and used as adzes. The implement shown in Plate XLVII, *B*, 2 is 6¼ inches long, 1¾ inches wide at the bit and 1¼ inches wide at the upper end. It is almost semicircular in cross section. The cutting edge is curved, but the lower side of the bit, which is ground with a well marked bevel, is flat. The implement fits the hand well and does not appear to have been hafted.

Only slightly smaller than No. 2 and with a similar bit, gouge No. 3 shown on the same plate is distinguished from it by having parallel sides.

No. 4 on the same plate shows a small specimen whose shaft has been broken. The bit has a width of 11/16 inches and its lower surface is slightly concave. The body of this gouge is almost circular in cross section and well polished throughout, although the marks of the chipping have not been completely obliterated. The bit shows use and sharpening, and the implement was probably a carving tool.

No. 1 on this plate is completely ground and has a narrow upper and broad lower surface, both of which are flat, while the sides are somewhat rounded. The upper surface narrows toward the rear so that the blade is almost triangular at the butt (the point of greatest thickness) and the whole shape is reminiscent of

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the lower part of a narrow *toki kouma* whose tang has been broken off. The implement appears to be complete however, and shows no signs of hafting. It is possible that this implement marks a transition from *toki kouma* to gouges and that the two classes of implements are related.

KNIVES AND SCRAPERS

Marquesan knives were usually made from bamboo or shell, and shells were used as scrapers, but stone knives and scrapers also existed. In the absence of iron tools, stone knives have been used as a makeshift until comparatively recent times. Pere Simeon Delmar, head of the Catholic Mission in Taiohae, Nuku Hiva, has witnessed the manufacture of stone knives. He says that the knives, often six to eight inches in length, were made from flakes of a special variety of phonolite, which were detached from a core by a single sharp blow with a rounded stone held in the hand. The natural fracture gave a fairly sharp edge to the flake and it was used without retouching or hafting. When the edge became dull from use, the implement was thrown away. In M. Delmar's experience these stone knives were used only to open and scale fish. Many phonolite flakes were found in old village sites, but their certain identification as knives is impossible. (See Pl. XLVIII, *G*.)

Two stone artifacts were collected which appear to have been scrapers. One of these, found in an old village site, is a large semicircular spall of some basaltic rock which has evidently been retouched along its lower edge. Its form is not unlike that of some of the shell scrapers used for tapa making. (See Pl. XLVIII, *E*, 1.)

The second specimen was collected on the island of Ei Ao. It is a thin spall of phonolite which has been worked into rectangular form and dressed along the outer end and one side with an abrupt retouch. This implement appears to be complete, and is much too thin and carefully worked to be a reject from the adz workshops. It was identified by natives as a scraper. (See Pl. XLVIII, *E*, 2.)

RUBBING STONES

The Marquesans used rubbing stones in the manufacture of various wooden objects and in dressing the large stone slabs which are a common feature of their masonry. The large rocks upon which adzes were ground and polished have already been described (p. 321) and mention has been made of the probable use of whetstones, but it is uncertain whether rubbing stones were used in the manufacture of other stone artifacts. The modern makers of *popoi* pounders deny their use, and none of the ancient artifacts show a finish which could not have been produced by careful pecking and a final polishing with sand. The large flat

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surfaces and true angles of the stone slabs, on the other hand, could hardly have been produced with any other implement. No information as to the form or material of these stone dressing tools was obtained, but it seems probable that they were fragments of cellular lava having a more or less flat, natural surface.

The rubbing stones used in wood working were of two types, abrasive stones, which were used to obliterate the marks of coarser tools and to some extent to shape the object, and burnishing stones, which were used to give a final high polish. All the abrasive stones seen were made from more or less water-worn lumps of coral or coraline limestone, but it appears probable that pebbles of the finer grained cellular lavas were also employed. The texture varied considerably and at least one specimen was so hard and smooth that it could have had little abrasive effect. Several rubbing stones of increasingly fine grain were used in finishing a given object, the last grinding stone being followed by the burnisher. (See Pl. XLVIII, *C*.)

Burnishing stones were small pebbles of even-textured, rather soft rock which were used only in the final stage of manufacture and had no abrasive effect. They were rubbed rapidly back and forth upon the surface to be polished, the workmen exerting a fairly heavy, even pressure. In time they acquired a peculiar glassy polish resembling that of a gastrolith. The smoother the implement the better the finish which it could impart to a bowl, so old specimens were highly prized. (See Pl. XLVIII, *D*.)

PERFORATED STONE DISKS

Two perforated stone disks were collected by the expedition, one, of unknown history, being obtained in the valley of Hane, Ua Huka, while the second was found lying among some skulls in a *me'ae* in the valley of Hanapaoa, Hiva Oa. Both specimens are made of rather porous lava. (See Pl. L, *A*, 1-2.) The dimensions are as follows: No. 1, length 3⅜ inches, width 2⅜ inches, thickness 1 inch, width of perforation at surface 1 inch, width of perforation at center 3-16 of an inch. No. 2, length 4 inches, width 3½ inches, maximum thickness 1¾ inches, minimum thickness 1½ inches, width of perforation at surface 1⅜ inches, width of perforation at center ⅝ of an inch. The perforation in No. 1 is almost perfectly centered, that in No. 2 noticeably nearer one end than the other. In both, the perforation appears to have been pecked rather than drilled, and is formed by two conical pits which meet in the middle of the objects in a rough edged orifice. The surfaces of both specimens are rather carefully smoothed.

Both objects were identified by an Atu Ona informant as weights for pump drills, but this explanation does not appear entirely satisfactory. The pump drill was a common Marquesan tool, and if such weights were used one would

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bowl was made of some rather hard close grained stone and was finely finished inside and out. Still another specimen (B3699C) appears to be a fragmnet of a rather shallow bowl 8 to 10 inches in diameter. It is made of a soft grey stone, possibly an indurated ash. At the lower end of the curve it bears a chevron carved in high relief along whose center there is a single incised line. It seems probable that this formed part of a zigzag band running around the bowl, but the fragment is too narrow to tell certainly. No. B3699D is a fragment from the side of a rather large and heavy bowl or tray having a bottom thickness of about one inch. The outer surface was smoothly finished and decorated with closely spaced incised lines forming simple curvilinear designs. (See Pl. XLIX, *E*.)

POUNDERS

INTRODUCTION

Pounders were, with the possible exception of adzes, the commonest of Marquesan stone artifacts, and they still form a regular part of the domestic equipment of all native households. In ancient times they appear to have been manufactured to some extent in all the valleys but even in prehistoric days the superiority of the stone found in Ua Pou and Ua Huka had led to a localization of the industry. The finished implements were traded from these islands to the rest of the group. The manufacture of *popoi* pounders has continued in Ua Huka down to the present time, and shortly before the war large numbers are said to have been made for a German trading company which sold them in their stores throughout the group and even in Tahiti.

At the present time the making of *popoi* pounders appears to be essentially a spare time industry, the natives working upon them when they have nothing more pressing to do.

For the pounders three varieties of stone were formerly used, all of which appear to have been rather soft, even grained magmatic rocks. The best grade was called *otuo*, a grey rock, fine grained, strong and light. The second best was called *puhite'a*, and the third best *potaho*. All these varieties are said to have been obtained from the high part of the island lying to the east of the valley of Hokatu, but as bowlders in two other valleys were pointed out as good pounder stone, it is probable that the deposits were rather wide spread. The stone does not appear to have been regularly quarried, but was obtained from rock slides and stream beds.

The only tool used in making modern *popoi* pounders is an ordinary steel axe, and even the finishing touches are given with this unwieldy instrument. The process of manufacture is as follows:

An irregular piece of stone about three times the size of the finished implement is roughed out with heavy blows of the axe until it becomes a cone. (See Pl. LI, *A*, 1.) This cone is then worked down by light blows on all sides until the general form of the finished implement is produced. This is then smoothed by light, even blows with the corner of the axe until all the contours are perfect. The neck and body of the implement are then shaved with the edge of the axe until the scratches left by the last process are obliterated. The head

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412 and base are left rough. The smooth surface of some new and unused specimens would seem to indicate the use of some sort of abrasive for the final finishing, but informants who were themselves makers insisted that this was not the case. The body of the implement is sometimes rubbed with a mixture of coconut charcoal and oil which gives it a shiny black finish contrasting pleasantly with the grey of the head.

Informants of Ua Huka insist that the ancient process of manufacture was essentially the same except that stone adzes were employed instead of the modern steel axe. The stone used on Ua Huka could probably have been worked in this way and the information may be correct for this locality, but in other islands a variety of rock was employed, some of which could hardly have been worked with stone adzes. The heads of many of the old pounders show marks which make it seem certain that they were finished by pecking.

MODERN POUNDERS

412 The modern commercial pounders all conform to a single well-marked type (Pl. LI, *A*, 2).

The pounders are characterized by a neck of oval cross section which expands to form the head and the body of the implement. There is no clear line of demarkation between these parts and it is impossible to say where one ends and another begins. From the neck the body flares outward toward the base, which is circular, so that when seen in profile the sides of the pounder appear concave. The bottom is convex, with a rather low curve, and is always left rough. The head is oval in horizontal cross section, the lower part contracting gradually toward the neck. The upper part has the form of a high rounded dome and is divided into two equal lobes by a transverse groove which extends down either side almost to the point of maximum width of the head. The surface of these lobes is left rough, apparently with ornamental intent, and the whole form is clearly phallic.

ANCIENT POUNDERS

The natives themselves classify pounders according to use, recognizing four distinct classes as follows: (1) *popoi* pounders, (2) pounders for infant food, (3) salt pounders, (4) children's pounders. They also recognize certain of these implements as forming a fifth distinct class whose use has been forgotten. As these native classifications according to use are correlated with differences in the size and form of the implements, they will serve as the basis for the present descriptions.

POPOI POUNDERS

Popoi pounders are numerically much more important than those of any other class, practically all large pounders belonging under this head. They are divided by the natives on the basis of size and weight into men's and women's pounders, the larger implements being used by the men. All *popoi* pounders are known by the generic term *kea tuki popoi* (stone to beat *popoi*) but those having flat heads are also known as *opu* (stomach). The phallic forms do not appear to have had special names. The term applied to the tiki-headed pounders was descriptive, meaning carved pounder.

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All *popoi* pounders agree with the commercial pounders in the form of the body and base. The necks range in cross section from oval to round, but the differences appear to be more or less accidental and are not correlated with other features. The range in size does not appear to have been very great, the ancient specimens seen varying in height from 7 to 8½ inches and in base diameter from 4½ to 5¾ inches. The variation is about the same in all subtypes. The subtypes are therefore based entirely upon differences in the form and decoration of the head. 4/2

The simplest form of *popoi* pounder appears to be the flat topped type called *opu*. In the plainest specimen collected (Pl. LI, *B*, 2) the neck is circular in cross section and expands only slightly at the top, the upper end being slightly convex. The curve of the bottom is unusually high. More commonly in this type the neck is more or less oval in cross section and the upper end shows a more marked expansion, its surface being flat or slightly concave. (See Pl. LI, *B*, 1.) In one specimen, which could not be obtained, the ends of the oval head projected beyond the neck in finely made flat flanges not more than one-fourth inch thick. A further modification of the *opu* type consisted in encircling the neck some distance below its upper end with a raised ring. (See Pl. LI, *B*, 3.) In view of the shape of one of the specimens of phallic form it seems probable that the idea here is phallic also. *Popoi* pounders of the *opu* type were seen only in the island of Hiva Oa, and as all the specimens were of local rock it seems possible that this was peculiar to Hiva Oa. [83]

The phallic type of pounder is much more common than the *opu* type and appears to have been the dominant form throughout the Marquesas. It may be subdivided into simple phallic representations, and the tiki headed pounders, which are clearly derived from the simple phallic form.

A single specimen (Pl. LII, *C*) may link the phallic pounders with the ringed specimens of the *opu* type. The neck of this implement is encircled a short distance below its upper end by a raised, smoothly rounded ring. The space above this ring is dome shaped and ungrooved. The whole appears to be a phallic representation.

The normal form of phallic pounder is well illustrated by the specimen shown on Plate LII, *A*. In this the neck expands smoothly to form a head of almost rectangular cross section, there being no line of demarkation between the two parts. The transverse groove is deep and the sides slope inward steeply. The ends are almost vertical and the top on either side of the groove is flat. The whole surface is treated as a series of slightly convex planes which meet in well marked angles. This angularity is most pronounced in No. 1. Most of the phallic pounders seen had this form and it is probably the prototype from which both the modern commercial and tiki headed pounders have been developed.

Two phallic pounders, shown on Plate LII, *B*, differ slightly from this normal type. The head of No. 1 is oval in cross section, the sides slope inward

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

412 rather abruptly, and the ends are almost vertical. The top bears a longitudinal groove instead of the usual transverse one. In No. 2 the head is smoothly rounded, with a short transverse groove.

Tiki Headed Pounders

412 531 Tiki headed *popoi* pounders represent the highest development of Marquesan stone working, the only objects which approach them in excellence being certain of the small stone figures. The expedition was fortunate enough to obtain five perfect specimens and the carved head of a sixth, while ten others were studied in private collections or from photographs. In all of these pounders the carving followed one or the other of two well-marked conventions and the series appears large enough to make possible a fairly accurate study of the type. In spite of their fine workmanship and present rarity tiki headed pounders were, and in some cases still are, used as ordinary household utensils. All informants agree that the carvings are purely decorative and have no religious significance.

In general form the tiki headed pounders agree perfectly with the angular headed type of phallic pounder already described, and it seems certain that they have been developed from these implements. According to informants the carving [324] was done with sharks' teeth or rats' teeth, but the form of the carving tools and the method of employment have been forgotten. In the actual specimens the grooves of the carving are semicircular in cross section and exhibit a high polish.

The decoration consists of two heads, formed by carving a face upon each of the lobes of a phallic pounder of normal angular type. In carving these faces two distinct conventions were employed, one of which appears to have been rare, being shown by only three of the sixteen specimens. In the normal convention the features are carved in low relief and the decorated top is set off from the neck of the pounder by a well marked groove. Each of the faces covers the entire surface of a lobe, its center line being in the middle of the outer end. The mouths are broad, in the form of long narrow ovals with rounded ends. The tongue is shown as a narrow longitudinal ridge, and the lips are broad, with a flat or slightly concave surface. In one specimen there is a narrow band between the lips and the tongue which may represent the teeth. Immediately behind each corner of the mouth a small decoration in the form of a "V" is sometimes carved. The nose is broad and flat, with almost semicircular nostrils. The eyes are carved on the upper corners of the lobe and are directed toward the side rather than forward, and the space between them is disproportionately wide. The eyes are of the usual spectacle form—a raised ring encircling a convex center—and are connected to the base of the nose at the inner end and to the ear at the outer end by narrow raised bands. As a rule the eyes are horizontal, but some specimens show a slight upward or downward inclination. The ears are represented as double scrolls, and are so placed that their outer edges fall along the line of the inner edge of each lobe. There is a well marked groove above either eye. The top of the head may be either rounded or pointed, while in one specimen broad flat grooves have been carved along either side above the eye groove, giving the head a sharp central keel. The space on the side of the pounder below the ears and between the corners of the mouths of the two faces is filled with either one or two small block figures bearing incised designs. In one specimen (not shown) a small block figure of this sort is placed in the middle of the forehead of either face.

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

The characteristics of the rarer type of tiki headed pounder (Pl. LIV, *A*) are as follows: 412 531

The features are carved in high relief and the whole effect is that of two heads made in the round and placed back to back, the faces projecting out beyond the oval neck at either end. The mouth is narrower than in faces of the common type and has a greater vertical width. The lips are thin and rounded and the tongue broad and prominent. The nose is small and almost naturalistic in its proportions, and juts out from the face. The eyes are large, with upper and lower edges of differing curve, a high rim, and a well marked longitudinal ridge across the eye ball. They are directed to the side, and the rear corners slope downward and backward so steeply that the ears, shown as simple hooks are at the level of the corners of the mouth. The top of the head is rounded and only slightly higher than the upper edge of the eye rings.

The finding of three specimens of practically identical form seems to indicate that these objects constituted a distinct type, but the natives can give no information on this point. The convention of the carving differs considerably from that employed on any other artifacts but is reminiscent of that of certain large stone heads used as architectural decorations. Pounders of this sort are certainly pre-European and it seems probable that they either had a special ceremonial significance, or were the product of some local school of carving which became extinct at an early time.

POUNDERS FOR INFANT FOOD

Special pounders were used to crush the fresh water shrimps which were fed to infants as a purgative before they were suckled for the first time. (See Pl. LIV, *C*.) They are smaller than the *popoi* pounders, and have an oval instead of a round base, only slightly concave sides, and no distinct neck. The top is oval in cross section and usually projects slightly beyond the body at either end. In the best made specimens the top is usually slightly hollowed along its center, but in one specimen it is smoothly rounded. In using these pounders, the body of the implement was grasped in the hand with the index finger extending lengthwise over the top, and the shrimps were crushed with a grinding motion rather than direct blows. 412 [853]

SALT POUNDERS

Certain small pounders are said by the natives to have been used for grinding coarse salt left in hollows of the rocks by the evaporation of sea water. These appear to have been fairly common in the island of Nuku Hiva but are rare or lacking elsewhere in the Marquesas. They are characterized by a long, thin headless neck, or body, which flares out rather abruptly at the base. The base is either round or oval. (See Pl. LIV, *D*.) 412 263

CHILDREN'S POUNDERS

A few very small pounders which were seen in the Marquesas were said to have been toys; although, as some of them showed considerable wear, they may 412 524

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

412 524 also have been used as pestles to grind medicines or pigment. According to informants little pounders of this sort were made for an adopted child in order that he might pound food for his pig. All those seen were miniature reproductions of *popoi* pounders, although never of phallic type. One specimen, of *opu* type, is only 3¾ inches high and 3 inches wide at the base. (See Pl. LIV, *B*.)

CONICAL POUNDERS

412 531 The natives recognized Conical Pounders as a distinct class, but they appear to have no name for them and can assign no special use; so the recognition is probably nothing more than a realization that these implements differ from all other pounders and cannot be placed in any of the regular categories. They are rare; only five examples were located.

The conical pounders are characterized by heavy conical bodies which entirely lack the slender neck and graceful bottom flare of ordinary *popoi* pounders, and by the peculiar finish of the upper end, which bears a short transverse grip. In four of the five specimens this part is carved. In the uncarved specimen, the grip is formed by two short cylindrical knobs which jut out from opposite sides of the top of the implement. Between their inner ends there is a rounded transverse ridge. (See Pl. LII, *F*.) Two of the carved pounders are large and two small. The size, shape and decoration of each pair are so closely similar as to indicate that they are either the work of the same artist or examples of an established type.

In the small pounders (Pl. LII, *D*) the grip is carved into a single human head, disproportionately large, with the face up.

The treatment of the head is decidedly naturalistic, the face being long and narrow with a projecting jaw. The mouth is almost circular, with thick rounded lips and a protruding tongue. The nose is high, with a sharp bridge; the cheeks sunken; and the eyes are in the form of long ovals, with a slight groove indicating the lower lid. The ears are indicated by shapeless knobs which are set above the level of the outer corner of the eye and do not appear to be connected to it. There is a suggestion of a smoothly rounded supra-orbital ridge. The head above the face is round and disproportionately short, its back projecting only slightly beyond the neck of the implement. In both specimens the execution is rather poor, the eyes being at slightly different levels.

In the large pounders (Pl. LII, *E*) the horizontal grip is divided into two equal parts by a transverse groove.

Each of these lobes is carved into a head, chin out. These heads, although worked out in less detail, are evidently much more closely related to those on the small pounders just described than to the ordinary Marquesan convention. They show the same projecting jaw, high nose, sunken cheeks, long oval eye, and knob ear. The mouth is not indicated. The carving is remarkably angular, suggesting the use of metal tools, but from certain details of the specimen examined it seems certain that they are pre-European.

These conical pounders offer an interesting problem, for they differ considerably from all other Marquesan types in both shape and decoration. The uncarved specimen was said by its donor to have been found in a sand dune in a small valley on the north side of Nuku Hiva. It is heavily patinated, suggesting a

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

considerable age. Of the carved specimens, one large and one small specimen are from Nuku Hiva and the other two from Hiva Oa. 412 531

In all five pounders the material appears to be local, and as the use of carved decoration on pounders is limited to the Marquesas, the theory of importation may be discarded. The heads carved on the small examples show a slight resemblance to those carved on the rarer type of tiki headed pounders, but the angularity of the features on the larger specimens finds no parallel in other Marquesan work. A similar angularity was noted, however, in some of the wood carvings in the Society Islands. The form of these specimens also finds a fairly close parallel in certain small specimens from Tahiti and in certain pounders of coral rock from the Austral Islands. The similarity of the decoration on all Marquesan conical pounders seems good evidence that it represents a distinct convention which was in some way linked with the conical form. The best explanation of these facts seems to be that the conical pounders are hybrids which owe their shape, and to a lesser degree the convention employed in their decoration, to a Southeastern Polynesian influence. An alternative explanation is that the conical pounders are archaic and that their carving shows a technique which is more primitive than the historic Marquesan convention.

COMPARISON OF MARQUESAN POUNDERS WITH OTHER POLYNESIAN TYPES

Stone pounders appear to be entirely lacking in Melanesia unless we include under this head certain heavy, bottle-shaped implements used for cracking nuts in the Solomon Islands and some archaeological finds in New Guinea. In Micronesia, stone pounders were used in the Marshall and Caroline Islands but seem to be lacking in the Gilbert Islands. In the Marshall Islands at least, they were used side by side with wooden pounders of identical shape. All the Micronesian pounders appear to be of one type, with some minor variations in the treatment of the upper surface of the head. They have been frequently described and figured. 412 171

The pounders of Polynesia must not be confused with the pestles which were found in many parts of Polynesia, but seem to have been unknown in the Marquesas.

Stone pounders do not appear to have been used in Samoa or Tonga but are found everywhere in marginal Polynesia with the possible exception of Easter and Chatham Islands. The New Zealand pounders appear to be pestles rather than true pounders and bear little resemblance to the other Polynesian forms. The absence of broad based pounders in New Zealand is of little significance in a comparative study, for these were specialized implements used principally for crushing breadfruit or taro and would have been of little use there,

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas-OX6

412 but their absence in Western Polynesia is of great interest and would seem to in-
171 dicate a well marked difference in culture.

If we exclude the curious stirrup pounders from Kaual in the Hawaiian islands and the New Zealand fern root pounders, we find a general similarity among Polynesian implements of this class. There are many minor differences in shape, permitting of the creation of a great number of subtypes, but the major differences appear in the finishing of the upper end or head. On the basis of these differences in head form we may divide the pounders into four types: domed, flat, phallic and transversed gripped. The domed form is characteristic of most Hawaiian pounders and seems to be limited to that group. The flat form appears as a minor type in the Marquesas and possibly in Hawaii, but is lacking elsewhere in Polynesia. It is normal in Micronesia, however. The phallic type is limited to the Marquesas. The transverse grip type is normal throughout Southeastern Polynesia, where it shows many local variations, and occurs as a very rare form in the Marquesas.

The normal Marquesan pounders resemble those from the Society Islands more closely in the form of the base, body and grip than they do those from Hawaii, but their phallic heads are more nearly related to the Hawaiian domed than the Southeastern transverse grip type.

STONE FIGURES

532 The Marquesans excelled all other Polynesians in the manufacture of stone figures. Although none of their carvings equalled the great Easter Island statues in size, they ranged from large figures over eight feet high to little statuettes scarcely six inches tall. Between these extremes there were all gradations in size. For the sake of convenience the statues will be divided into those which were intended to be permanently set up and those which were portable, only the portable one being considered here. A single object of uncertain significance, which does not belong in either of these classes, will also be described.

532 A number of small stone figures of fish were used in the *me'ae* of the fish-
778 ermen. These figures were used one at a time and those not in use were buried within the precincts. The figure in use was placed upon an altar within the main house and was kept there as long as the catches were good. If the luck changed it was removed and replaced by another. According to a different account, which could not be correlated with the above, the small fish figures were the property of ordinary individuals. When the owner went fishing he took the image with him and threw it into the sea, and so great was its mana that on his return he would find it again at a given place, to which it had supernaturally returned.

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

MISCELLANEOUS TOOLS

Quiros (51) says that the Marquesans used adzes made from thick fish bones or shells. This is the only evidence of the occurrence of these implements in the Marquesas and as no examples are known, it seems probable that Quiros confused the Marquesas with some of the low coral islands visited on the same voyage. 412 321

Sharks' teeth, hafted in various ways, were formerly used as knives and carving tools, but no specimens seem to have survived and the methods of hafting have been forgotten by the present natives. According to Langsdorff (38, p. 175) the teeth from the lower jaw of the shark were used as substitutes for gimlets or awls, being fastened to wooden handles. Sharks' teeth, apparently unhafted, were also used as razors. The hair was gathered in small bunches and the tooth sawn back and forth across it at the roots. [325] [302]

Very few bone tools appear to have been used in the Marquesas. Fleurieu (23, p. 135) mentions the use of bone awls. Narrow wedge-like implements of bone or hard wood were used to pound the feather caulking into the bow and stern seams of canoes. Bone knives are described on page 351.

A number of shell implements appear to have been employed in wood carving, although we have no information as to their form. The grooves in *tou* wood tapa beaters are said to have been cut with pearl shells ground to a keen edge, and the handles were shaped with a small black shell, called *mama*. Fleurieu (23, p. 135) says that the Marquesans used "pieces of shell of different shapes and sizes, sharp or toothed like a saw." Knives made from whole pearl shells ground to a sharp edge were used for a number of purposes. There appears to have been no clear distinction between these and the shell scrapers used in tapa making.

Rasps made from the skin of the shark or giant ray were used in shaping clubs and other objects made from the hard *toa* wood. They were made by wrapping the skin around a smooth stick while it was wet and soft. One end of the stick projected a few inches beyond the skin, forming the handle. (See Pl. LVI, *A*.) Fine shark skin, apparently not mounted, was used in polishing bowls and other wooden objects. Sections from the tail of the giant ray were also used as rasps, requiring no preparation other than drying. These tail rasps have continued in use until modern times for the grating of sandal wood, although recently they have been supplanted by files. The spines of the sting ray are said to have been hafted and used as saws. 412 322 237

Chisels edged with rats' teeth were formerly used by expert Marquesan artisans in the carving of hard stone. None of these implements have survived, 412 324 [237]

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

and the method of hafting is problematical. The objects carved with rats' teeth indicate that the work was done by continued rubbing rather than by strokes of the chisel, as the bottoms of the carved lines show a high polish.

The most important wooden tool appears to have been the mallet. This was employed with the chisel in shaping and carving wooden objects, and was also used with caulking tools. Mallets were made of *toa* wood, and were short and heavy. The specimen shown (Pl. LVI, *B*) is 11 inches long, with a maximum width at the head of 4 inches, and a maximum thickness of 1¼ inches. The handle of the mallet was round or rectangular and was frequently pierced near the outer end for the attachment of a wrist loop. The head was pear shaped in outline, expanding and thickening gradually toward the outer end. The sides and end of the head were flat, with a surface at right angles to that of the broad surfaces. In use the blow was struck with the broad face, not with the edge.

No specimens of the ancient caulking tools were seen, but those used on the bow and stern seams of canoes are said to have been wedge shaped. Those used for the lashing holes along the sides were simply pointed sticks with a flat upper end. The favorite material for these implements was *toa* wood.

A long needle of hard wood (Pl. LVI, *C*) was used to sew on house thatch and to pass the cord used in canoe lashings through the lashing holes. The specimen collected is slightly over a foot in length. On one side of the point there is a short barb. The butt has a small knob, to which the cord was attached.

The pump drill was the most elaborate of the Marquesan tools. Apparently no examples have been preserved, but their form and method of use are still remembered by the older natives. The Marquesan drills appear to have been identical with those used elsewhere in Polynesia, although there are indications that some of them were equipped with stone whorls, a rare feature. According to informants, drill points were made in ancient times from a sliver of stone, a shark's tooth, or a rat's tooth. All these materials were replaced at a very early date by iron nails obtained from Europeans.

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

A special tool (Pl. LVII, *C*) made from the shell of a cowrie (*Cypraea* ***mauritiana***) is used for peeling the ripened fruit. 413 252

An oval hole with sharp edges is ground through the rounded end of the shell. At the opposite end the top is broken away, the base of the shell and a strip across the center being left intact. When in use, the shell is held in the hand transversely, with the base against the palm and the sharp edge toward the outer side of the hand. It is moved downward and away from the body. The peelings cut off by the sharp edge pass through the shell and fall out at the rear aperture like the shavings from a plane. These peelers are remarkably rapid and effective, superior to any European tool for peeling breadfruit.

It is interesting that an identical tool is used in Kuschai, in the Carolines, although it is not reported from other parts of Micronesia. It is impossible to outline the Polynesian distribution of this tool. It was used in the Society Islands, but not in Hawaii, and seems to be absent in Tonga. [171]

When properly ripe, the breadfruit are soft enough for the raw pulp to be easily separated from the core with the fingers. Slightly unripe fruits are sometimes cut up for *ma* making. In ancient times this was probably done with a wooden breadfruit splitter. An implement of this sort in the Bishop Museum is eight inches long, with a maximum width of four inches. (See Pl. LVII, *B*.) It has a long oval blade terminating in a broad flat knob. Only the outer end of the blade is sharpened. It is made of some rather hard, light weight wood.

Fresh breadfruit are roasted on an open fire, the proper moment for removing them being determined by the sound they give when tapped with a stick. They are lifted from the fire with two sticks, or, in well equipped households, with tongs. 252 412

These tongs are made from a single straight piece of wood, preferably *mio*, about 2½ inches in diameter and 3 to 4 feet long. The wood is split for the lower two-thirds of its length and the ends spread apart. A few turns of fau bark are usually tied around the upper part of the stick to keep it from splitting in two. Tongs of this sort are also used to arrange the hot stones used in the earth oven, or UMU. [824]

The charred outer surface of the breadfruit is removed with a knife of wood or bone. Most of the wooden knives appear to have been simple sticks with one end fashioned into a thin blade. Any wood, even that of the fau, might be used. (See Pl. LVII, *E*.) The bone knives are more carefully made (Pl. LVII, *F*.) As all those seen were shaped from the leg bones of cattle it seems doubtful that the type is an ancient one.

The upper end is squared and rubbed smooth, the natural swell of the bone at the joint giving the handle a slightly expanded butt. The blade is formed by grinding away one side of the shaft. The average knife is 9 inches long, with a blade length of 4 inches. The blade is 1½ inches wide at the base, tapering toward a broad rounded point.

After peeling, the breadfruit is dropped into the *popoi* trough, cored, and beaten into a paste with the *popoi* pounder.

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

415 252 The *popoi* trough is usually made from breadfruit wood. An average specimen is 5 feet long and 16 inches wide, with square ends, straight sides, and a rounded lower and slightly excavated upper surface. In new specimens the depth of the hollow rarely exceeds 1½ inches but in old specimens it may be as much as 3 inches deep in the center, due to wear. In one very old *popoi* trough, evidently made with stone tools, the interior had been hollowed with fire. The dimensions of individual *popoi* troughs vary considerably, but those used in Nuku Hiva are on the whole shorter and broader than those used in the southern islands.

IMPLEMENTS FOR PREPARING COCONUTS

412 252 Coconuts rank next to breadfruit in the Marquesan dietary, but they seem to have been somewhat less important in pre-European times. They are gathered by hand, without special appliances. The first step in their preparation is to remove the thick husk. This is done by means of a pointed stake, about two inches in diameter, which is fixed rigidly in the ground, point up. To husk the nut it is grasped in both hands, struck sharply upon the point of the stake, and twisted away from it, removing a sliver of the husk, the process being repeated until only the inner shell remains. The process appears easy, but it calls for a considerable skill in manipulation. Nuts are usually husked where gathered, to avoid carrying unnecessary weight.

Nuts other than the thinnest shelled drinking nuts are opened by a few sharp blows of a stone given along the line of greatest diameter, an expert being able to break a nut into two almost equal halves in this way. The water in the cavity of old nuts is thrown away, and the flesh itself, rarely eaten, is grated to extract the milk. Coconut graters vary considerably in the details of form, but are all made upon a single principle.

The graters consist of a stool, or seat of some sort, from one end of which an arm projects more or less horizontally. At the end of the arm the actual scraper is fastened. In ancient times this consisted of a piece of rough coral, or of a strip of shell with the upper edge cut into teeth. Much care is expended upon the seat portion of some of these scrapers, which appears the more remarkable as the furniture of a Marquesan home rarely includes stools or other raised seats. To use the scraper the workman places himself astride the seat, and rubs the nut rapidly over the end of the arm, with a downward and outward motion. A bowl placed below catches the fragments of meat as they fall. When a sufficient quantity of the grated meat has collected, water is added and the whole mixed to a paste.

A strainer is then brought into play to separate the milk from the meat.

This strainer is nothing more than a thick bundle of fiber, about one foot in length and two to three inches in diameter, which is spread out and drawn across the bowl toward the workman, gathering up part of the paste. The ends of the strainer are then twisted in opposite directions, enclosing the paste, and the whole lifted from the bowl and wrung out, the liquid expressed falling back in the bowl. The dry meat remaining in the strainer is thrown away and the process repeated until only a thick creamy white fluid remains in the bowl. Two species of fiber are used for strainers, the commoner is that from the husk of the coconut. The finer strainers are made from the fibers of the stem of a long-leaves plant, which in leaf form and habit of growth resembles large garlic, and from a reference in Jardin (33) is probably *Cyperus mocreilema*. No attempt is made to separate the fiber from the substance, the stems are simply split into long strips. (This fiber is also commonly employed for kava strainers, but there is a con-

[824]

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

ventional difference in the method of straining the two substances, kava being squeezed with one hand only while coconut milk is wrung out with both hands.)

Copra, the dried kernel of the coconut, although not a food, plays an important part in Marquesan domestic economy. The old method of copra making was as follows:

> The ripe nuts were husked and broken into two equal halves by the methods just described. These halves were tied together, back to back, by wisps of the husk left attached to them for the purpose. They were then hung up high enough to be out of the reach of pigs and left until the kernel was partly dry and had begun to separate from the shell. The meat was then removed with a special tool made of *toa* wood.
>
> These tools (Pl. LVI, *D*) have a smoothly tapering handle whose outer end is pointed, and a flat or slightly concave blade which curves upward toward its tip. In length they range from 10 to 14 inches and in blade width from 1½ to 2¼ inches. In modern copra making these wooden knives have been largely replaced by tools having an iron blade of somewhat similar form.

Tree cotton appears to have been introduced into the Marquesas in post-European times and the appliance used to separate the fiber of this tree from the seeds is probably an introduction (Pl. LVI, *F*). There is some uncertainty on this point, however, and it seems well to describe the tool as though it were a Marquesan invention.

> The instrument consists of a straight piece of fau wood about 20 inches long and ⅜ of an inch in diameter whose lower end is split into four equal parts. Two slivers of bamboo, each about four inches long, are placed in the splits at right angles to each other about two inches above the tip of the shaft and lashed with thin string. The tips of the bamboo and of the splints of the shaft are sharply pointed. To use the implement the lower end is placed in a mass of mixed fiber and seeds and the shaft twirled rapidly back and forth between the palms until a mass of fiber has collected around the points. This clear fiber is then removed and the process repeated until only the seeds remain. It should be remarked that the seeds of tree cotton are not covered with lint and separate from the fiber much more readily than the seeds of the commercial cotton.

MISCELLANEOUS DOMESTIC IMPLEMENTS

Digging sticks were employed in agriculture, also in digging earth ovens and *ma* pits. They appear to have been simply poles four to five feet long made of some hard wood, *toa*, *kookuu*, and *piapiau* being the species preferred. The shaft was about three inches in diameter and was sharpened at the lower end into a broad flat edge. In view of the close resemblance between Marquesan stilt steps and the foot rests of Maori digging sticks, it seems rather curious that the Marquesans never hit upon this simple improvement. Digging sticks are no longer used in the group, and no information was obtained as to their exact method of use.

Before the introduction of iron, bamboo knives were used for cutting a variety of soft non-fibrous substances. These knives are now obsolete and no specimens were collected.

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

412 [824] [782] According to the accounts of informants the bamboo knives were slivers, one-half to three-quarters of an inch in width, from the stalk of the smaller of the two native species of bamboo. When first split off, the outer coat of the stem gives a surprisingly sharp edge, but this soon becomes dull with use. When a knife became dull it was usually thrown away and another sliver selected; but it was occasionally sharpened by tearing a thin strip off the edge with the teeth. Jardin (33, p. 53) says that knives made from this bamboo were used to dispatch human victims for sacrifice.

Knives made from sharpened pearl shells were used, also stone knives made from long flakes.

373 [824] On the rare occasions when an indoor light is required the natives use candles made of *ama* nuts. The ripe nuts are baked in an earth oven, the shells cracked, and the oily kernels extracted whole. These kernels are then strung on the stiff midrib of a coconut leaflet, the lower end of the midrib being left bare for some inches to serve as a base, or handle. As far as can be learned no special candle holder is used. The lower end of the midrib is simply thrust between two stones of the paved house floor. When ignited, the kernels burn slowly, with a flickering smoky flame and the light requires constant tending, as it is necessary to knock off the cinder of each nut with a short stick as soon as the fire had passed to the one below. It is rather curious that lamps appear never to have been used by the natives in the Marquesas, although their use was common in both the Society Islands and Hawaii. Torches were rarely used for interior illumination, but are still extensively used in night fishing. (See p. 397.) [171]

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TANGED ADZES: *A*, FRONT VIEW; *B*, REAR VIEW; *C*, SIDE VIEW OF ADZES WITH TRIANGULAR CROSS SECTION; *D*, FRONT AND SIDE VIEWS OF ADZES WITH QUADRANGULAR CROSS SECTION; *E*, *F*, FRONT AND SIDE VIEWS OF ADZES OF TOKI AA TYPE; *G* AND *H*, ADZES OF TOKI KOUMA TYPE—FRONT, SIDE AND REAR VIEWS.

[End plate 6]

TANGLESS AND UNCLASSIFIED ADZES: *A*, TANGLESS ADZES, FRONT, SIDE, AND REAR VIEWS; *B*, UNCLASSIFIED ADZES, FRONT AND SIDE VIEWS—1, BISHOP MUSEUM NO. 6138; 2, BISHOP MUSEUM NO. B3075; 3, BISHOP MUSEUM NO. B3076; 4, BISHOP MUSEUM NO. 6147; 5, BISHOP MUSEUM NO. B3083.

[end plate]

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7: Lemon E-5 (1920-1921) 1923 OX6 Marquesas

I, TANGLESS ADZES OF POLYNESIA, FRONT AND REAR VIEWS: 1, MARQUESAS; 2, TONGA; 3, SAMOA; 4, EASTER ISLAND; 5, CHATHAM ISLANDS; 6, SOCIETY ISLANDS; *B*, MARQUESAN GOUGES.

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[End plate 8]

7: Limon E-5 (1920-1921) 1923 CX6 Marquesas CX6

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[end plate 9]

T. Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

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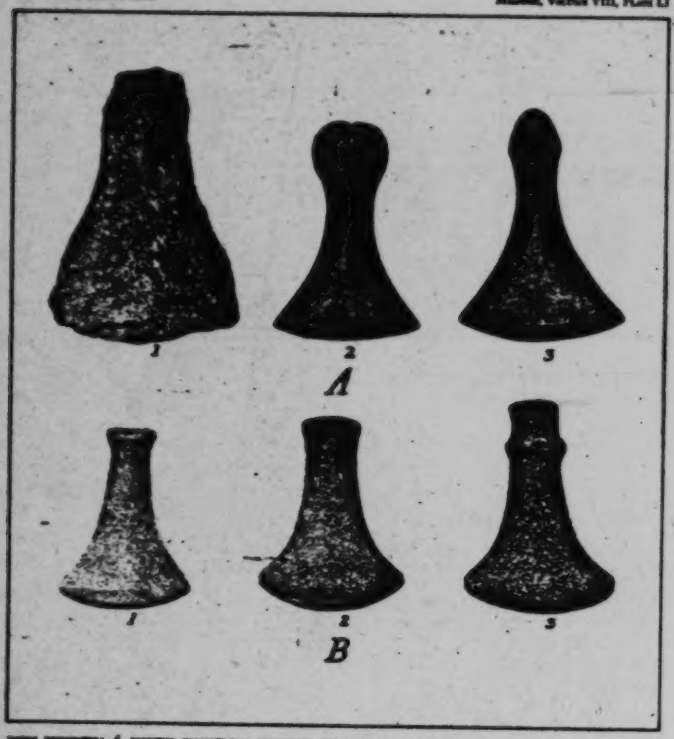

STONE POUNDERS: *A*, MODERN COMMERCIAL POUNDERS FROM UA HUKA. FIGURE AT THE LEFT SHOWS FIRST STAGE OF MANUFACTURE; *B*, ANCIENT POUNDERS, OPU TYPE.

[end plate 12]

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CLAY FOUNDERS: *A*, PHALLIC FOUNDERS OF NORMAL FORM, SIDE AND END VIEWS; *B*, PHALLIC FOUNDERS OF UNUSUAL FORM; *C*, HEAD AND NECK OF PHALLIC FOUNDER OF UNUSUAL FORM; *D*, HEAD AND NECK OF CONICAL FOUNDER, SIDE AND TOP VIEWS; *E*, DOUBLE HEADED CONICAL FOUNDER, SIDE AND TOP VIEWS; *F*, UNCARVED CONICAL FOUNDER.

Lewis plate 137

Lewis, T. E-3 (1926-1931) 1923 CO5 Mapimeo CO5

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TIKI HEADED ADZE FOUNDERS OF NORMAL TYPE, FRONT AND SIDE VIEWS

End plate 147

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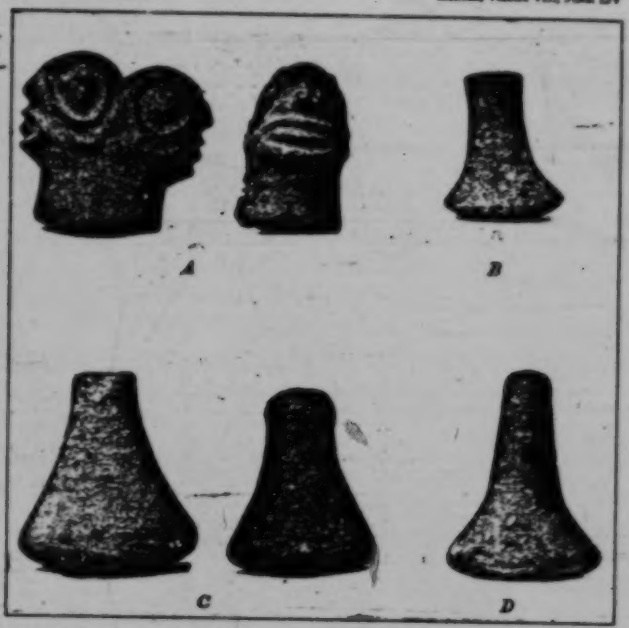

POUNDERS: *A*, HEAD OF POUNDER OF TYPICAL TYPE, FRONT AND SIDE VIEWS; *B*, CHILD'S POUNDER; *C*, POUNDER FOR INFANTS' FOOD; *D*, SALT POUNDER.

[end plate 15]

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

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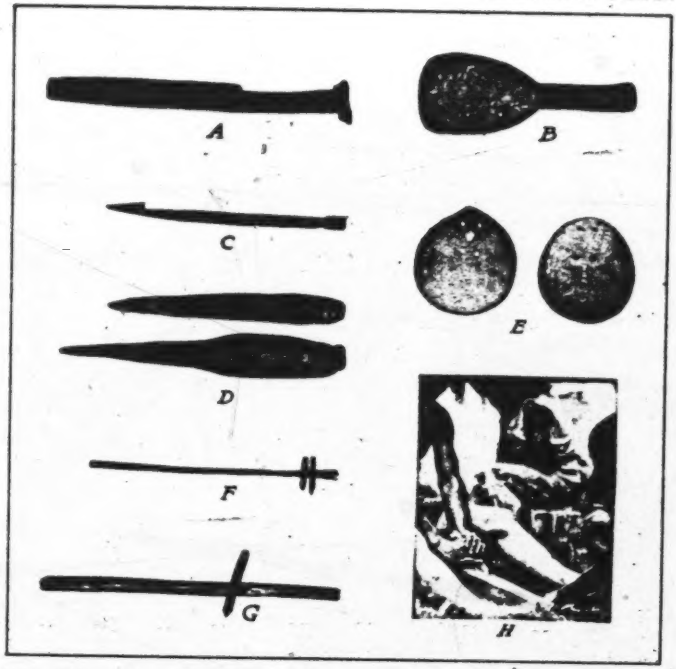

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MISCELLANEOUS IMPLEMENTS: *A*, SHARK SKIN RASP; *B*, MALLET; *C*, THATCHING NEEDLE; *D*, TOOLS FOR MAKING COPRA; *E*, BOWLS OF LARGE SPOONS OR LADLES; *F*, COTTON SEED EXTRACTOR; *G*, FIRE STICKS; *H*, METHOD OF USING FIRE STICKS.

[end plate 17]

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

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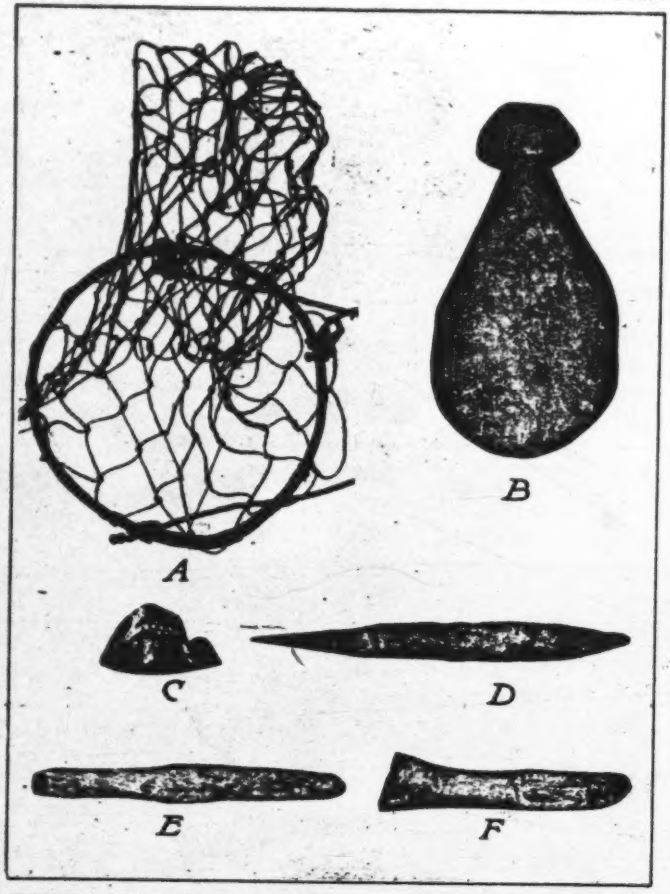

ARTICLES USED IN PREPARING BREADFRUIT: *A*,—NET FOR CARRYING FRUIT; *B*, SPLITTER; *C*, PEELER; *D*, STICK FOR PIERCING FRUIT; *E*, WOODEN KNIFE; *F*, BONE KNIFE FOR PEELING COOKED FRUIT.

[end plate 19]

9: Greiner E-4 (no date) 1923 OX6 Marquesas OX6

absent (Pl. XVII, *a-b*). One figure (Pl. XVII, *c*) has a triangular body and thin, spindly legs. 531X

One motif which recurs a number of times seems to be a conventionalized representation of a human being. It depicts only the head and shoulders, the head being a triangle with apex pointing downward and joined to an inverted U. In some figures there is a longitudinal line drawn through the center of the U, making that portion of the figure look like a small letter m. This third or central vertical line represents the trunk of the body, while the outer lines represent the shoulders and the arms of the person (Pl. V, *b*).

USE OF DECORATIVE DESIGNS

Except for objects carved in recent years there is little indication that the carver had a preconceived notion of the completed decoration. The Marquesan did not make a pattern and then arrange his designs to achieve a symmetrical effect. He used whatever designs occured to him at the time so that no two objects are decorated exactly alike and seldom is an object found which has what is known as balance. Certain carvers did, however, develop an individual style and their work may be quite easily recognized even in a large collection by the choice of designs, the general arrangement of the designs, or the technique in the carving.

DESIGNS ON HOUSE POSTS

In addition to house posts carved in the round according to the tiki convention (p. 5) there are a great many posts with angular geometric and curvilinear designs. In former times the designs were cut on the posts by stone adzes but metal tools have been used for many years. This change has had very little influence upon the selection of designs. 531X 412● 353

It will be noted that the designs are never applied in a continuous band running the full length of the post but are carved in sections of various widths. Each section is separated from the next either by a single line or by a group of parallel lines at right angles to the long axis of the post. A few posts show an irregular longtitudinal division somewhere near their center. This consists of an area of uncarved wood separating the carvings of different designs. 531X 353

Angular geometric motifs are predominant in the designs on house posts but compared with recent work the older carvings show a more liberal use of curvilinear patterns. With the assistance of Ralph Linton (22) the following summary of the design elements and motifs used in the house post decorations has been prepared:

10: Linton E-5 (1920-1921)1939
OX6 Marquesas OX6

Famine was a constant and entirely unpredictable threat. The fear of famine resulted in a tremendous value being placed on food. Marquesan eating habits and everything associated with food show the effect of this periodic shortage.

At the age of ten every child went through the ceremony of sanctifying the hands; after this, he could prepare food for himself and others. The cooking and eating were done in separate houses set twenty yards or so from the main dwelling. No one ever ate in the dwelling house or near the food-storage house. Food for men and for women was prepared separately and even cooked at different fires and in different utensils. Most foods were eaten by both men and women, although there were some food taboos for women. There were a number of permanent taboos on food; certain foods could not be eaten by persons in certain occupations; taboos were imposed for several months before a feast, largely to insure bountiful provision for the occasion. A family head might taboo the crop from certain trees in preparation for a betrothal or other ceremony. However, taboos on specific foods were not highly developed. This may have been due to the periods of famine, when such taboos would have seriously interfered with survival.

The social value of food is reflected in many ways; first, in the regulation about its use, and again in the tremendous elaboration and decoration of the various objects used in connection with food. For example, the breadfruit pounders, made of rock and weighing from one and a half to three pounds, were usually carved in a design of human faces. The labor of such carving was enormous, as the stone was very hard and the only thing available to cut it with was the teeth of rats. To carve the top of a pounder would take all a man's spare time for six months. Similarly, the utensils from which food was eaten, the cocoanut cups and containers in which spare food was stored, were carved with extreme delicacy and elaboration, for the Marquesans were artists of a high order.

Food was kept in a special storehouse mounted on posts and taboo to women. Food was one of the few things subject to

/10 cont./

At childbirth the Marquesan woman is quite free to indulge 844
in histrionics if she wishes, although some prefer to endure in [152]
stony silence as the majority of injuries and illnesses are endured. Crying and shouting are permissible, however, a very common theme being: 'E na 'ua mate 'ua! (I'm dying!), followed by: 'aue, or: 'aue ho'i 'e (alas).

The position of the woman during delivery seems to be a relatively variable affair. In one birth at which we assisted, the wife sat on the floor with legs drawn up on a dirty dress with her back against a sandalwood chest, upon which the husband [352]
sat. She leaned her head back between his thighs and, extending her arms upward, locked her fingers /11/ behind his neck. He bent over her, pushing downward on her stomach with both hands rhythmically. In other instances the women recline completely for delivery, a practice probably resulting from [177]
contact with infirmary routine. One unusual case was reported in which the woman stood, bent over and leaning on a window sill. This experiment was followed by a severe hemorrhage, nearly resulting in death.

The umbilical cord (te aho) is milked, tied with twine and cut, usually with scissors or a knife. As these implements have [412]
rarely been cleaned for the occasion, not to mention being sterilized, it is not infrequent that infections of the umbilicus result. At least one infant fatality was attributable to this [165]
cause during our stay in Hatiheu (5 months).

The delivery of the afterbirth (pu henua) is not facilitated by massage of the fundus. Those who deliver in the sitting position remain so, until the afterbirth is expelled. Should the afterbirth be delayed, the woman is taken by both arms and legs and shaken violently until the afterbirth comes. This is often followed by a slight hemorrhage.

The afterbirth is taken out after delivery and buried in an area such as the wash house, where it will be constantly damp, the dampness is presumed to keep away ants which would [825] [753]
normally devour the tissues should it merely be buried. If ants do attack the afterbirth, it is believed that the infant will suffer an eye infection. Many families today, however, merely [178]

/13 cont./
(kiko mata) are not white, this is symptomatic of an unhealthy condition, for which a specific (pa'a'u -- unidentified species) is recommended. 846 757

It is especially important for the mother to avoid the use of salt, as in the prenatal period, as its use will result in the infant being afflicted with mouth sores and "cradle-cap" (mate kea). Should this occur, a remedy consisting of the leaves of the kenae tree (Erythrinia indica) is mixed in the fermented breadfruit paste before it is heated for the mother's consumption. [753] [824]

The flow of lochia (vai kua) is believed to stop after a week or so with the restoration of the internal organs (e ti 'a hou). Should the perineum not heal, however, it is symptomatic of the retention by the woman of portions of the afterbirth, etc., known as kau tama (literally: baby debris) which must be passed before recovery is possible. To induce the passing of this harmful material, the leaves of the unidentified pa'a'u plant are again utilized, to be crushed and taken internally. Leaves of the Phaseolus are used in the same fashion for chronic /14/ complaints after birth. [824]

After birth, the child is fed on a little gruel of thinned breadfruit paste, crushed cooked shrimp juice, or both. In the past, special stone pestles were prepared for the crushing of shrimp, for the infant's first meal. Stimulating the flow of colostrum (vai ha'ama) by nursing is thought to aid in the evacuation of all harmful substances which may reside in the mother's body after birth. Once the flow of milk (vai 'u) begins, the supplement of gruel is dispensed with. At present many parents use canned milk for the infant in place of gruel and even sugared water is used as a supplement. In such cases, the milk is prepared in any small bottle (usually a Perrier water bottle) and fitted with a store-bought nipple. 844 [412] ● 853 [178]

Once the child begins nursing he continues to be fed, on demand, until the age of 2 to 3 years. In one case, weaning did not occur until 4 years of age. Nursing by women other than the physiological mother is common. Aunts of the child (paternal, maternal or both) are often wet nurses. These

/26 cont./
rationale. Certain deviate individuals have refused to undergo circumcision, possibly /27/ as a concession to campaigns carried on by some French missionaries to stamp out the practice. One entire family in Taiohae has traditionally refused to be circumcised. Many males of this family have ultimately yielded to intense social pressure from their male friends, and also from their wives, being circumcised finally in their late twenties. Much of this pressure is exerted in the form of constant oblique joking about circumcision and people who are unclean. In the case of the wives, however, more direct pressure can be exerted. Their requests are usually in the form: "Why aren't you like other men?"

Circumcision in the Marquesas involves a very loose approximation to the true meaning of the term, for the operation involves a longitudinal incision through the foreskin on the dorsal aspect of the glans penis (po'ama).

A group of boys are gathered together and circumcised at one time by an individual who specializes in this operation. It is often attempted to have a relative of the parents generation perform the operation. No attempt is made to anesthetize the locale of the incision. The foreskin is stretched tightly over a slip of bamboo which has been inserted between it and the glans, while the incision is made with a razor blade or knife. Recently, scissors have come into vogue in Taiohae, as it is said that they make a much cleaner incision. In the aboriginal past, incisions were made with bamboo knives.

/28/ After circumcision, a medicinal preparation is applied to speed healing of the incision and prevent infection. This consists of the astringent juice of the candle-nut tree bark ('ama = A. trilobita) and the leaves of the kaka'a hue (Diellia Brownii). (Two other plants are also used but we could not identify them.) This is applied daily after bathing, at which time the area around the wound is carefully cleaned; then the penis is placed with the dorsal side against a sun-heated stream boulder until it is dried. The heat from the stream boulder is believed to have a beneficial effect on the healing process.

/89 cont./

A report of Linton (1938, p. 164) that nursing of children was not practiced by the Marquesans receives no support from the present data, other ethnographic reports or historical sources. Linton claimed that the natives believed that nursing made the child hard to manage and not submissive to its parents; as well as having a deleterious effect on the appearance of the breasts of the mother, which he believed to be of considerable importance to the Marquesan woman: "They believe that prolonged nursing spoiled the breasts and consequently were reluctant to do it (1938, p. 165)."

Breast feeding of infants in the Marquesas is attested by the earliest historical records. Thus Marchand in 1792 stated that one of his staff, Captain Chanal, saw mothers suckling their children. Langsdorf in 1807 observed that children were not weaned until they could "go alone," and many were not weaned until they could speak. Some, however, were occasionally fed with additional semi-solid food, generally popoi (fermented and fresh breadfruit paste, mixed). Although Langsdorf's commander, Krusenstern, claimed that children were not nursed, drawings made by the /90/ expedition artist show infants nursing quite plainly, reinforcing Langsdorf's observations. Radiguet, in 1840, stated that although the child would be accustomed to popoi a little after birth, he would not be weaned until "the last extremity, that is to say, when the milk dries up."

Handy, evidently referring to the informant who was the source of Linton's statement says that the informant must have been speaking of the thin gruel of pounded shrimps and poi used in lieu of mother's milk to purge infants after birth and was certainly not referring to a permanent practice of not nursing infants (Handy 1923, p. 75). Von den Steinen (1928, p. 35) describes stone pounders used to prepare the gruel used as food during the first three days of the child's life, after which nursing was presumably begun as the main source of nourishment.